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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DANIEL LEE AVERY, JOEL PATRICK BAILEY,  
RANDALL PENDLEY and ALLYN FARMER

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Appeal 2008-3883  
Application 10/796,480  
Technology Center 2100

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Decided:<sup>1</sup> June 17, 2009

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Before ALLEN R. MACDONALD, *Vice Chief Administrative Patent Judges*, LANCE LEONARD BARRY, and JAY P. LUCAS, *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 CFR § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

## STATEMENT OF THE CASE

The Patent Examiner rejects claims 1-10, 13-14, 16-18, 22-26 and 29. The Appellants appeal therefrom under 35 U.S.C. § 134(a). We have jurisdiction under 35 U.S.C. § 6(b).

## INVENTION

The invention at issue on appeal is a "configurator" programmed to route test signals via a selected circuit path on a configurable circuit. More specifically, the invention sets switches based on test signals it detects at an input node of the circuit. With this approach, switching for test data routing is effected automatically, without requiring manual switching approaches, such as those involving the use of jumpers. (Spec. 3.)

## ILLUSTRATIVE CLAIM

1. For use in controlling routing circuitry having configurable test signal routing paths with controllable switches therein for coupling test signals between dedicated test-signal circuitry and a target circuit device, a circuit configurator arrangement comprising:

a test-signal sense circuit to detect test signals carried by at least one of the test signal routing paths,

a switch-control interface circuit to control the controllable switches; and

a control logic circuit to send control signals to the switch-control interface circuit, in response to the detected test signals carried by said at least one of the test signal routing paths, and therein control routing of test signals in the configurable test signal routing paths.

PRIOR ART

Garreau

US 6,425,101

Jul. 23, 2002

REJECTION

Claims 1-10, 13, 14, 16-18, 22-26, and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Garreau.

CLAIMS 1-10, 13, 14, 16-18, 22, AND 29

When multiple claims subject to the same ground of rejection are argued as a group by appellant, the Board may select a single claim from the group of claims that are argued together to decide the appeal with respect to the group of claims as to the ground of rejection on the basis of the selected claim alone. Notwithstanding any other provision of this paragraph, the failure of appellant to separately argue claims which appellant has grouped together shall constitute a waiver of any argument that the Board must consider the patentability of any grouped claim separately.

37 C.F.R. § 41.37(c)(1)(vii).

Here, the Appellants argue claims 1-10, 13, 14, 16-18, 22, and 29 as a group. (Amended App. Br. 8-11.) All these claims are subject to the same ground of rejection. Therefore, we select claim 1 as the sole claim on which to decide the appeal of the group. "With this representation in mind, rather than reiterate the positions of the parties *in toto*, we focus on the issues therebetween." *Ex Parte Zettel*, No. 2007-1361, 2007 WL 3114962, at \*2 (BPAI 2007).

#### CONTROLLABLE SWITCHES

The Examiner finds that "Garreau's programmable connectors (412) would have been the controllable switches." (Ans. 5.) The Appellants argue that "[t]he Examiner . . . has to date provided no reference that teaches or suggests these limitations . . . ." (Reply Br. 4.)

#### ISSUE

Therefore, the issue before us is whether the Appellants have shown error in the Examiner's finding that Garreau would have suggested controllable switches.

#### LAW

The question of obviousness is "based on underlying factual determinations including . . . what th[e] prior art teaches explicitly and inherently . . . ." *In re Zurko*, 258 F.3d 1379, 1383 (Fed. Cir. 2001) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966); *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999); *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995)). "A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 783 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051 (CCPA 1976)).

#### FINDINGS OF FACT ("FFs")

1. Garreau teaches "a test network 200 . . . . The test network 200 includes a master controller 202 connected to a programmable switch 204. The programmable switch 204, in turn, is connected to a slave target device 206 containing JTAG [i.e., Joint Test Action Group] compliant integrated circuits IC1 through IC4." (Col. 4, ll. 40-46.)

2. Figure 4 of the reference shows a programmable switch, "one possible embodiment of the programmable switch 204 shown in FIG. 2. The programmable switch 400 includes vertical data lines 402 programmably [sic] connected to horizontal data lines 404 forming what is referred to as a 'crossbar' switch. The vertical data lines 402 and horizontal data lines 404 can be selectively electrically connected to each other using programmable connectors to provide a signal path suitable for passing control signals and data signals." (Col. 6, ll. 51-60.)

#### ANALYSIS

Garreau uses programmable connectors to selectively connect vertical and horizontal data lines to each other to provide a signal path for control and data signals. (FF 2.) We agree with the Examiner that such programmable connectors constitute controllable switches.

#### CONCLUSION

Based on the aforementioned facts and analysis, we conclude that the Appellants have shown no error in the Examiner's finding that Garreau would have suggested controllable switches.

#### DETECTING TEST SIGNALS AND SENDING CONTROL SIGNALS

The Examiner makes the following findings.

Garreau teaches the JTAG controller (210) senses or detects test results of an IC (IC1, IC2, IC3 or IC4) that is being feedback from a feed back path (211-2). Garreau also teaches that the ICs can be tested in a priority order. For example, if the IC1 is to be the first integrated circuit to be tested, then when the testing of IC1 has been completed, the process is repeated for all ICs to be tested upon the test protocol executed by the master controller (202) (column 5 lines 22-36, column 6 lines 18-32).

(Ans. 11-12.) The Appellants argue that "[t]he Examiner's Answer provides no further evidence of any prior art that teaches or suggests these limitations . . . ." (Reply Br. 4.)

#### ISSUE

Therefore, the issue before us is whether the Appellants have shown error in the Examiner's finding that Garreau would have suggested detecting test signals and sending control signals to a switch-control interface circuit in response to the detected signals.

#### LAW

"Every patent application and reference relies to some extent upon knowledge of persons skilled in the art to complement that [which is] disclosed. . . ." *In re Bode*, 550 F.2d 656, 660 (CCPA 1977) (quoting *In re Wiggins*, 488 F.2d 538, 543 (CCPA 1973)). Those persons "must be presumed to know something" about the art "apart from what the references disclose." *In re Jacoby*, 309 F.2d 513, 516 (CCPA 1962).

#### FINDINGS OF FACT

3. Garreau 's "master controller 202 also contains a switch controller 218 connected to the programmable switch 204. As described in detail below, the switch controller 218 provides a switch control signal used by the programmable switch 204 to connect the selected ones of the integrated circuits IC1-IC4 that are being tested to the JTAG controller 210 by way of the I/O [i.e., input/output] lines 211. In a preferred embodiment, the connection between the JTAG controller 210 and the integrated circuits is in the form of a feedback loop. The feedback loop includes a feed forward path that the JTAG controller 210 uses to provide test instructions to the JTAG test circuit included in the integrated circuit under test. The JTAG test circuit responds back to the JTAG controller 210 with corresponding test results using the associated feed back path." (Col. 5, ll. 11-25.)

4. Figures 2 and 4 of the reference show that the feedback loop passes through and thus encompasses the programmable switch.

5. Garreau explains that "[b]y uniquely identifying each location on the slave target device, configuration data representative of a particular test configuration can be used to establish (or set up) a wide variety of testing situations." (Col. 5, ll. 59-62.) "[T]o set up a test environment represented by the configuration data . . . master controller 202 provides the programmable switch 204 with the appropriate switch control signal that is based upon the destination addresses included in the configuration data. Testing priority data (i.e. The testing order) can also be included. For



example, if the integrated circuit IC1 is to be the first integrated circuit to be tested . . . the master controller 202 provides a switch control signal  $SC_{IC1}$  that directs the programmable switch 204 to form the feedback loop between the master controller 202 and the integrated circuit IC1. Once the feedback loop has been formed, the master controller 202 executes the appropriate test instructions in order to assess the functionality of the integrated circuit IC1. When the testing of IC1 has been completed, the process is repeated for all integrated circuits to be tested based upon the test protocol executed by the master controller 202." (Col. 6, ll. 15-32.)

#### ANALYSIS

Garreau's master controller provides its programmable switch with the appropriate switch control signals to set up a test environment. (FF 5.) We agree with the Examiner that providing the switch control signals to the programmable switch would have suggested sending control signals to a switch-control interface circuit.

The reference then forms a feedback loop between a master controller and an IC to be tested. (FF 3.) The controller provides test instructions to the test circuit of the IC. (*Id.*) The path of the instructions passes through the programmable switch. (FF 4.) We agree with the Examiner that providing test instructions to the programmable switch (for routing to the IC) constitutes sending control signals to a switch-control interface circuit.

Garreau's master controller also receives test results via the feedback loop. (FF 3.) We also agree with the Examiner that receiving the test results constitutes detecting testing signals.

We find that persons skilled in the art would have known that during the testing of an IC, different sets of test instructions and test results are exchanged. In such a situation, the master controller sends further test instructions after receiving certain test results. We find that receiving intermediate test results and sending further test instructions would have suggested detecting test signals and sending control signals to a switch-control interface circuit in response to the detected testing signals.

Furthermore, Garreau can test plural ICs in a specified order. (FF 5.) When the master controller receives all the results of testing a particular IC, it provides the programmable switch with the appropriate switch control signal to establish a connection to the next IC to be tested. (*Id.*) We agree with the Examiner that receiving the results of testing one IC and sending a switch control signal to establish a connection to the next IC would have suggested detecting test signals and sending control signals to a switch-control interface circuit in response to the detected testing signals.

#### CONCLUSION

Based on the aforementioned facts and analysis, we conclude that the Appellants have shown no error in the Examiner's finding that Garreau would have suggested detecting test signals and sending control signals to a switch-control interface circuit in response to the detected signals.

### CLAIMS 23-26

The Appellants argue claims 23-26 as a group. (Amended App. Br. 9-11.) All these claims are subject to the same ground of rejection. Therefore, we select claim 23 as the sole claim on which to decide the appeal of the group.

### ISSUE

The Examiner makes the following findings and conclusion.

Garreau teaches the programmable switches (400) having a plurality of programmable connectors (412). Garreau also teaches the master controller (202). Even though the programmable connectors (412) in the programmable switch (400) and the master controller (202.) are separated, it would have been obvious to one skilled in the art at the time the invention was made to house both Garreau's programmable switch (400) and Garreau's master controller together and then name such a housing as "(the) first one of the inter-connectable circuit boards". One having ordinary skill in the art would be motivated to realize so because housing two elements (i.e. Garreau's programmable switch [400] and master controller [202]) together and then name such a housing with another name (i.e. "the first one of the inter-connectable circuit boards") would have not affect any performance of the two elements.

(Ans. 15.) The Appellants argue that "[t]he alleged switching (via switch 400) in the Garreau reference is separate from either the master controller 202 or the slave device 206." (Amended App. Br. 9.) Therefore, the issue before us is whether the Appellants have shown error in the Examiner's conclusion that it would have been obvious to collocate Garreau's master controller and programmable switch in the same housing.

## LAW

[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant.

After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument.

*In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). "An observation by the Board that the examiner made a *prima facie* case is not improper, as long as the ultimate determination of patentability is made on the entire record." *Id.* (citing *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984); *In re Rinehart*, 531 F.2d 1048, 1052 (CCPA 1976)).

## ANALYSIS

Here, the Examiner makes a *prima facie* case of obviousness by explaining why it would have been obvious to locate Garreau's master controller and programmable switch in the same housing. The Appellants fail to address that explanation. Instead, they argue that Garreau's master controller and programmable switch are not so collocated. Arguing that a reference is not anticipatory cannot defeat a rejection based on obviousness.

## CONCLUSION

Based on the aforementioned facts and analysis, we conclude that the Appellants have shown no error in the Examiner's conclusion that it would have been obvious to collocate Garreau's master controller and programmable switch in the same housing.

**DECISION**

We affirm the rejection of claims 1-10, 13-14, 16-18, 22-26 and 29.

No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

**AFFIRMED**

pgc

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